

May 23, 2002

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SUBJECT: SUMMARY OF MAY 2, 2002, PUBLIC MEETING WITH  
NUCLEAR ENERGY INSTITUTE (NEI), BOILING WATER  
REACTOR OWNERS' GROUP (BWROG) AND OTHER  
INTERESTED STAKEHOLDERS REGARDING POTENTIAL  
CHANGES TO 10 CFR 50.46 (LOCA-LOOP REQUIREMENT)

The NRC staff hosted a public meeting on May 2, 2002, at the request of NEI, to allow stakeholders the opportunity to provide their ideas for making risk-informed changes to the ECCS reliability requirements, specifically changes to the current requirement to postulate a loss of offsite power (LOOP) when performing thermal-hydraulic calculations to demonstrate meeting the emergency core cooling system (ECCS) acceptance criteria stipulated in 10 CFR 50.46. NEI also requested that the staff discuss its progress in proceeding with risk-informed changes to the ECCS reliability requirements. This meeting was one in a series of public meetings and teleconferences held with stakeholders on this subject. The viewgraphs for the industry and staff presentations are available under ADAMS accession number ML021270010. Attachment 1 contains the list of attendees.

An EPRI representative presented the results of an industry expert elicitation process used to estimate the probability of a LOOP given a large loss of coolant accident (LOCA). A report on this process was submitted to the NRC a few days before the meeting (ADAMS accession number ML021270019). Based on the results of the expert elicitation, EPRI recommends the use of a mean probability of LOOP given LOCA of 0.01, with 5<sup>th</sup> and 95<sup>th</sup> percentile values of 0.001 and 0.03, respectively.

The staff provided industry with a number of comments on the EPRI methodology, with the principal concern being whether the EPRI methodology appropriately accounted for the probability of the Class 1E (i.e., safety) AC buses disconnecting from the offsite grid due to actuation of the degraded voltage protection relays as a result of the reactor trip, automatic bus transfer and loading of ECCS equipment associated with the occurrence of a LOCA, particularly

when degraded voltage conditions exist in the offsite transmission-system grid. Industry representatives responded that:

- licensees perform the plant voltage analyses very conservatively, i.e., assuming the lowest expected transmission-system grid voltage; therefore, there is only a very small window where the grid voltage would be above the voltage that would result in a collapse of the grid, but be below the voltage level analyzed;
- many utilities have, or are planning to have, transmission control agreements (TCAs) in place, which should minimize the time that plants are in this window;
- INPO SOER 99-1 requires that these analyses are reviewed to be correct and updated to reflect the current state of the plant;
- the industry experts in the elicitation all perform or are familiar with these voltage analyses; and
- the industry experts discussed this issue exhaustively and concluded that it would not be a significant contributor to the conditional probability of LOOP given a LOCA.

The staff indicated its belief that the analyzed plant voltage levels are not necessarily low enough (i.e., conservative enough) to encompass all levels of grid degradation that can reasonably be expected to occur. The staff also noted that currently there is little experience with the current protocols (i.e., the TCAs), and that there is some concern over some of the models used by the transmission system operators (TSOs) or independent system operators (ISOs) for evaluating contingency conditions. In addition, the staff noted that plants have been raising the set-points of their degraded voltage relays, leaving little margin between the relay set-points and the lowest expected plant switchyard voltages. However, the staff did comment that in order to be a significant contributor to the conditional probability of LOOP given a LOCA, plants would have to be in this vulnerable window (i.e., exposed to a sufficiently degraded grid) on the order of at least several days per year.

It was decided that this issue would be further pursued at the next public meeting, and that some of the industry electrical experts would be in attendance to enhance the discussions.

Subsequent to the discussion on conditional LOOP probability, the staff presented a summary of the technical work being performed to support rulemaking for a risk-informed alternative to the reliability requirements in 10 CFR 50.46/GDC 35. Some of the significant comments made during the staff presentation include:

- The methodology presented by the staff for assessing the risk impact of changes in the ECCS design basis should be clarified to consider the overall net impact of all risk changes (both positive and negative) associated with a proposed change (i.e., a proposed change may result in a moderate increase in risk associated with a particular design basis accident (DBA), which may not meet the NRC-established risk thresholds, but may also result in a substantial risk decrease in a more risk-significant accident, such that the net effect is a risk decrease at the plant).
- Consideration should be given to whether there is a need for a limit on cumulative risk increase associated with proposed changes under risk-informed regulations.
- The staff would like industry to provide information with respect to potential applications that industry would pursue under the risk-informed alternative to GDC 35.

- The proposed alternative to GDC 35 is risk-informed, not risk-based, i.e., the risk (PRA) numbers are only one part of the picture; the defense-in-depth principles must be maintained.
- Besides considering unaccounted for failure mechanisms that might increase LOCA frequencies in the future, the in-house elicitation for LOCA frequencies, recently performed by the staff, also considered areas that might decrease LOCA frequencies in the future (e.g., improved ISI or leak detection).

The NRC staff and industry agreed to meet again shortly on risk-informed changes to the ECCS reliability requirements, in order to further the exchange of information. As stated previously, for the next meeting, industry agreed to make available some of the electrical experts that participated in the elicitation of the conditional LOOP probability given a LOCA, and also to provide some additional information on potential applications and safety benefits. The staff agreed to review and provide additional comments on the EPRI expert elicitation report on conditional LOOP probability.

Attachment: List of Attendees

Project No. 689

cc: See next page

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MAY 02, 2002  
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